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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.357	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.046	4-8	0.020

Total Area Contributing (ha) = 0.066

Total Pipe Volume (m³) = 4.232

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	11.925	0.200	59.6	0.011	5.00	0.0	0.600	o	150	Pipe/Conduit	
S2.000	11.648	0.200	58.2	0.010	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	16.579	0.165	100.5	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.000	11.941	0.200	59.7	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	10.000	0.100	100.0	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	8.561	0.035	244.6	0.002	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.15	65.500	0.011	0.0	0.0	0.0	1.30	23.1	1.5
S2.000	50.00	5.15	65.500	0.010	0.0	0.0	0.0	1.32	23.3	1.4
S1.001	50.00	5.43	65.300	0.027	0.0	0.0	0.0	1.00	17.7	3.7
S3.000	50.00	5.15	65.800	0.007	0.0	0.0	0.0	1.30	23.0	0.9
S1.002	50.00	5.59	65.135	0.040	0.0	0.0	0.0	1.00	17.8	5.4
S1.003	50.00	5.72	64.160	0.042	0.0	0.0	0.0	1.15	127.5	5.7

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.000	11.409	0.190	60.0	0.012	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	12.896	0.130	99.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.004	13.918	0.060	232.0	0.012	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.005	12.587	0.125	100.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S4.000	50.00	5.15	65.800	0.012	0.0	0.0	0.0	1.30	23.0	1.6
S4.001	50.00	5.36	65.610	0.012	0.0	0.0	0.0	1.01	17.8	1.6
S1.004	50.00	5.91	64.125	0.066	0.0	0.0	0.0	1.19	130.9	8.9
S1.005	50.00	6.12	64.065	0.066	0.0	0.0	0.0	1.00	17.7	8.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN	Invert Level (m)	Diameter (mm)	Pipes In PN	Invert Level (m)	Diameter (mm)	Backdrop (mm)
SSW01	66.500	1.000	Open Manhole	600	S1.000	65.500	150				
SSW02	66.500	1.000	Open Manhole	600	S2.000	65.500	150				
SSW03	66.500	1.200	Open Manhole	600	S1.001	65.300	150	S1.000	65.300	150	
								S2.000	65.300	150	
SSW04	66.500	0.700	Open Manhole	600	S3.000	65.800	150				
SSW05	66.300	1.165	Open Manhole	1200	S1.002	65.135	150	S1.001	65.135	150	465
								S3.000	65.600	150	
SSW06	66.100	1.940	Open Manhole	1500	S1.003	64.160	375	S1.002	65.035	150	650
SSW07	66.500	0.700	Open Manhole	600	S4.000	65.800	150				
SSW08	66.500	0.890	Open Manhole	600	S4.001	65.610	150	S4.000	65.610	150	
SSW09	66.100	1.975	Open Manhole	1500	S1.004	64.125	375	S1.003	64.125	375	
								S4.001	65.480	150	1130
SSW10 H/B	66.300	2.235	Open Manhole	1500	S1.005	64.065	150	S1.004	64.065	375	
S	66.300	2.360	Open Manhole	0		OUTFALL		S1.005	63.940	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SSW01	385887.867	400886.658	385887.867	400886.658	Required	
SSW02	385905.198	400870.678	385905.198	400870.678	Required	
SSW03	385896.638	400878.578	385896.638	400878.578	Required	
SSW04	385897.490	400898.783	385897.490	400898.783	Required	
SSW05	385906.980	400891.536	385906.980	400891.536	Required	
SSW06	385915.065	400885.362	385915.065	400885.362	Required	
SSW07	385916.869	400909.271	385916.869	400909.271	Required	
SSW08	385909.952	400900.198	385909.952	400900.198	Required	
SSW09	385920.123	400892.269	385920.123	400892.269	Required	
SSW10 H/B	385928.569	400903.331	385928.569	400903.331	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
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S	385936.183	400913.354			No Entry	
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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	SSW01	66.500	65.500	0.850	Open Manhole	600
S2.000	o	150	SSW02	66.500	65.500	0.850	Open Manhole	600
S1.001	o	150	SSW03	66.500	65.300	1.050	Open Manhole	600
S3.000	o	150	SSW04	66.500	65.800	0.550	Open Manhole	600
S1.002	o	150	SSW05	66.300	65.135	1.015	Open Manhole	1200
S1.003	o	375	SSW06	66.100	64.160	1.565	Open Manhole	1500
S4.000	o	150	SSW07	66.500	65.800	0.550	Open Manhole	600
S4.001	o	150	SSW08	66.500	65.610	0.740	Open Manhole	600
S1.004	o	375	SSW09	66.100	64.125	1.600	Open Manhole	1500
S1.005	o	150	SSW10 H/B	66.300	64.065	2.085	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	11.925	59.6	SSW03	66.500	65.300	1.050	Open Manhole	600
S2.000	11.648	58.2	SSW03	66.500	65.300	1.050	Open Manhole	600
S1.001	16.579	100.5	SSW05	66.300	65.135	1.015	Open Manhole	1200
S3.000	11.941	59.7	SSW05	66.300	65.600	0.550	Open Manhole	1200
S1.002	10.000	100.0	SSW06	66.100	65.035	0.915	Open Manhole	1500
S1.003	8.561	244.6	SSW09	66.100	64.125	1.600	Open Manhole	1500
S4.000	11.409	60.0	SSW08	66.500	65.610	0.740	Open Manhole	600
S4.001	12.896	99.2	SSW09	66.100	65.480	0.470	Open Manhole	1500
S1.004	13.918	232.0	SSW10 H/B	66.300	64.065	1.860	Open Manhole	1500
S1.005	12.587	100.7	S	66.300	63.940	2.210	Open Manhole	0

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	SSW01	150	0.850	1.050	Unclassified	600	0	0.850	Unclassified
S2.000	SSW02	150	0.850	1.050	Unclassified	600	0	0.850	Unclassified
S1.001	SSW03	150	1.015	1.050	Unclassified	600	0	1.050	Unclassified
S3.000	SSW04	150	0.550	0.550	Unclassified	600	0	0.550	Unclassified
S1.002	SSW05	150	0.915	1.015	Unclassified	1200	0	1.015	Unclassified
S1.003	SSW06	375	1.565	1.600	Unclassified	1500	0	1.565	Unclassified
S4.000	SSW07	150	0.550	0.740	Unclassified	600	0	0.550	Unclassified
S4.001	SSW08	150	0.470	0.740	Unclassified	600	0	0.740	Unclassified
S1.004	SSW09	375	1.600	1.860	Unclassified	1500	0	1.600	Unclassified
S1.005	SSW10 H/B	150	2.085	2.210	Unclassified	1500	0	2.085	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.005	S	66.300	63.940	63.850	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.357		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SSW10 H/B, DS/PN: S1.005, Volume (m³): 5.3

Unit Reference	MD-SHE-0095-5000-1700-5000
Design Head (m)	1.700
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	95
Invert Level (m)	64.065
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	5.0	Kick-Flo®	0.851	3.6
Flush-Flo™	0.417	4.5	Mean Flow over Head Range	-	4.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.1	0.800	3.9	2.000	5.4	4.000	7.5	7.000	9.7
0.200	4.2	1.000	3.9	2.200	5.6	4.500	7.9	7.500	10.1
0.300	4.5	1.200	4.3	2.400	5.9	5.000	8.3	8.000	10.4
0.400	4.5	1.400	4.6	2.600	6.1	5.500	8.7	8.500	10.7
0.500	4.5	1.600	4.9	3.000	6.5	6.000	9.0	9.000	11.0
0.600	4.4	1.800	5.1	3.500	7.0	6.500	9.4	9.500	11.3

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Storage Structures for Storm

Porous Car Park Manhole: SSW01, DS/PN: S1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.0
Max Percolation (l/s)	11.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	66.000	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: SSW02, DS/PN: S2.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.0
Max Percolation (l/s)	11.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	66.000	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: SSW09, DS/PN: S1.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	4.0
Max Percolation (l/s)	11.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	65.600	Cap Volume Depth (m)	0.350

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.357 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SSW01	15 Summer	1	+0%	100/15 Winter				65.525
S2.000	SSW02	15 Winter	1	+0%	100/15 Winter				65.524
S1.001	SSW03	15 Winter	1	+0%	100/15 Summer				65.344
S3.000	SSW04	15 Winter	1	+0%					65.819
S1.002	SSW05	15 Winter	1	+0%	100/15 Summer				65.191
S1.003	SSW06	15 Winter	1	+0%	30/15 Summer				64.242
S4.000	SSW07	15 Winter	1	+0%					65.826
S4.001	SSW08	15 Winter	1	+0%	100/60 Winter				65.640
S1.004	SSW09	15 Winter	1	+0%	30/15 Summer				64.240
S1.005	SSW10	H/B 15 Winter	1	+0%	1/15 Summer	100/120 Summer			64.237

PN	US/MH Name	Surcharged		Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
S1.000	SSW01	-0.125	0.000	0.06		1.3		OK	
S2.000	SSW02	-0.126	0.000	0.06		1.2		OK	
S1.001	SSW03	-0.106	0.000	0.19		3.1		OK	
S3.000	SSW04	-0.131	0.000	0.04		0.8		OK	
S1.002	SSW05	-0.094	0.000	0.29		4.6		OK	
S1.003	SSW06	-0.293	0.000	0.05		4.5		OK	
S4.000	SSW07	-0.124	0.000	0.07		1.4		OK	
S4.001	SSW08	-0.120	0.000	0.09		1.4		OK	
S1.004	SSW09	-0.260	0.000	0.06		6.2		OK	
S1.005	SSW10	H/B	0.022	0.000	0.25	4.0	SURCHARGED		1

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.357 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SSW01	15 Winter	2	+0%	100/15 Winter				65.529
S2.000	SSW02	15 Winter	2	+0%	100/15 Winter				65.527
S1.001	SSW03	15 Winter	2	+0%	100/15 Summer				65.351
S3.000	SSW04	15 Winter	2	+0%					65.822
S1.002	SSW05	15 Winter	2	+0%	100/15 Summer				65.199
S1.003	SSW06	30 Winter	2	+0%	30/15 Summer				64.303
S4.000	SSW07	15 Winter	2	+0%					65.830
S4.001	SSW08	15 Winter	2	+0%	100/60 Winter				65.644
S1.004	SSW09	30 Winter	2	+0%	30/15 Summer				64.302
S1.005	SSW10 H/B	30 Winter	2	+0%	1/15 Summer	100/120 Summer			64.299

PN	US/MH Name	Surcharged		Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
S1.000	SSW01	-0.121	0.000	0.08		1.7		OK	
S2.000	SSW02	-0.123	0.000	0.07		1.6		OK	
S1.001	SSW03	-0.099	0.000	0.24		4.0		OK	
S3.000	SSW04	-0.128	0.000	0.05		1.1		OK	
S1.002	SSW05	-0.086	0.000	0.37		5.9		OK	
S1.003	SSW06	-0.232	0.000	0.05		4.5		OK	
S4.000	SSW07	-0.120	0.000	0.09		1.9		OK	
S4.001	SSW08	-0.116	0.000	0.11		1.8		OK	
S1.004	SSW09	-0.198	0.000	0.06		6.2		OK	
S1.005	SSW10 H/B	0.084	0.000	0.27		4.3	SURCHARGED		1

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.357 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 45

PN	US/MH		Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
	Name	Storm							
S1.000	SSW01	15 Winter	30	+0%	100/15 Winter				65.539
S2.000	SSW02	15 Winter	30	+0%	100/15 Winter				65.537
S1.001	SSW03	15 Winter	30	+0%	100/15 Summer				65.375
S3.000	SSW04	15 Winter	30	+0%					65.832
S1.002	SSW05	15 Winter	30	+0%	100/15 Summer				65.234
S1.003	SSW06	30 Winter	30	+0%	30/15 Summer				64.860
S4.000	SSW07	15 Winter	30	+0%					65.842
S4.001	SSW08	15 Winter	30	+0%	100/60 Winter				65.657
S1.004	SSW09	30 Winter	30	+0%	30/15 Summer				64.860
S1.005	SSW10 H/B	30 Winter	30	+0%	1/15 Summer 100/120 Summer				64.858

PN	US/MH Name	Surcharged		Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)			
S1.000	SSW01	-0.111	0.000	0.15		3.2		OK	
S2.000	SSW02	-0.113	0.000	0.14		2.9		OK	
S1.001	SSW03	-0.075	0.000	0.48		7.9		OK	
S3.000	SSW04	-0.118	0.000	0.10		2.1		OK	
S1.002	SSW05	-0.051	0.000	0.74		11.7		OK	
S1.003	SSW06	0.325	0.000	0.09		8.1	SURCHARGED		
S4.000	SSW07	-0.108	0.000	0.17		3.5		OK	
S4.001	SSW08	-0.103	0.000	0.21		3.5		OK	
S1.004	SSW09	0.360	0.000	0.09		9.6	SURCHARGED		
S1.005	SSW10 H/B	0.643	0.000	0.28		4.5	SURCHARGED		1

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.357 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level
									(m)
S1.000	SSW01	60 Winter	100	+45%	100/15 Winter				65.797
S2.000	SSW02	60 Winter	100	+45%	100/15 Winter				65.797
S1.001	SSW03	60 Winter	100	+45%	100/15 Summer				65.792
S3.000	SSW04	15 Winter	100	+45%					65.844
S1.002	SSW05	60 Winter	100	+45%	100/15 Summer				65.780
S1.003	SSW06	120 Summer	100	+45%	30/15 Summer				65.773
S4.000	SSW07	15 Winter	100	+45%					65.858
S4.001	SSW08	60 Winter	100	+45%	100/60 Winter				65.769
S1.004	SSW09	120 Summer	100	+45%	30/15 Summer				65.794
S1.005	SSW10 H/B	120 Summer	100	+45%	1/15 Summer	100/120 Summer			66.300

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SSW01	0.147	0.000	0.16		3.3	SURCHARGED	
S2.000	SSW02	0.147	0.000	0.14		3.0	SURCHARGED	
S1.001	SSW03	0.342	0.000	0.49		8.0	SURCHARGED	
S3.000	SSW04	-0.106	0.000	0.18		3.9	OK	
S1.002	SSW05	0.495	0.000	0.70		11.1	SURCHARGED	
S1.003	SSW06	1.238	0.000	0.07		6.4	SURCHARGED	
S4.000	SSW07	-0.092	0.000	0.32		6.6	OK	
S4.001	SSW08	0.009	0.000	0.22		3.5	SURCHARGED	
S1.004	SSW09	1.294	0.000	0.14		14.7	SURCHARGED	
S1.005	SSW10 H/B	2.085	0.776	0.31		5.0	FLOOD	1